IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

1. (PREVIOUSLY PRESENTED) A method of generating mesh data which represent a characteristic value associated to combined cube elements and are used in a computer analysis related to a target object, comprising:

forming grid lines orthogonally crossing each other over a target object;

forming cube data from mesh data obtained by dividing the target object by the grid lines, the cube data being formed of cube elements that are mesh elements forming the target object, wherein the cube data is obtained by determining whether each of mesh elements forming the mesh data forms the target object based on a first condition of the target object in the mesh element;

generating combined cube elements by combining the cube elements in accordance with a second condition so that a number of the combined cube elements is smaller than a number of cube elements; and

storing the combined cube elements to be used in the computer analysis related to the target object,

wherein the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary according to the second condition.

2. (CANCELLED).

3. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein the first condition of the target object in the mesh element is a ratio of volume of the target object in the mesh element to volume of the mesh element.

4. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein said second condition is preventing the change of the shape of the target object formed of the cube data.

5. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein said second condition is preserving the substantial shape of the target object formed of the cube data.

6. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein said second condition is preventing a substantial change of the total volume of the cube elements.

7. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein said second condition is that the combining of the cube elements preserves the substantial total volume of the cube elements .

8. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein said second condition is maintaining the aspect ratio of each of the surfaces of each of the composite cube elements within a predetermined range.

9. (ORIGINAL) The method as claimed in claim 8, wherein:

each of the composite cube elements has a rectangular parallelepiped shape; and

the aspect ratio of each of the surfaces of each of the composite cube elements is a ratio of a length of a first side to a length of a second side of the surface, the first and second sides being orthogonal to each other.

10. (ORIGINAL) The method as claimed in claim 1, wherein the grid lines partitioning the cube elements are reduced in number as the cube elements are combined to be reduced in number.

11. (PREVIOUSLY PRESENTED) A computer readable medium storing a program which causes a computer to execute a method of generating mesh data which represent a characteristic value associated to combined cube elements and are used in a computer analysis related to a target object, the method comprising:

forming grid lines orthogonally crossing each other over a target object;

forming cube data from mesh data obtained by dividing the target object by the grid lines, the cube data being formed of cube elements that are mesh elements forming the target object; and

generating combined cube elements by combining the cube elements in accordance with a predetermined condition selected from a group of predetermined conditions consisting of preventing a change of a shape of the target object formed of the cube data, preserving a substantial shape of the target object formed of the cube data, preventing a substantial change of a total volume of the combined cube elements, preserving the total volume of the combined cube elements, and maintaining an aspect ratio of surfaces of each of composite cube elements created by combining the cube elements within a predetermined range; and

storing the combined cube elements to be used in the computer analysis related to the target object,

wherein the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary to satisfy the predetermined condition.

12. (PREVIOUSLY PRESENTED) A computer-readable recording medium storing a program for causing a computer to execute a method of generating mesh data which represent a characteristic value associated to combined cube elements and are used in a computer analysis related to a target object, the method comprising:

forming grid lines orthogonally crossing each other over a target object;

forming cube data from mesh data obtained by dividing the target object by the grid lines, the cube data being formed of cube elements that are mesh elements forming the target object; and

generating combined cube elements by combining the cube elements in accordance with a predetermined condition selected from a group of predetermined conditions consisting of preventing a change of a shape of the target object formed of the cube data, preserving a substantial shape of the target object formed of the cube data, preventing a substantial change of a total volume of the combined cube elements, preserving the total volume of the combined cube elements, and maintaining an aspect ratio of surfaces of each of composite cube elements created by combining the cube elements within a predetermined range, wherein the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary to satisfy the selected predetermined condition.

13. (PREVIOUSLY PRESENTED) An apparatus for generating mesh data which represent a characteristic value associated to combined cube elements and are used in a computer analysis related to a target object, comprising:

a setting part forming grid lines orthogonally crossing each other over a target object;

a calculation part obtaining cube data from mesh data obtained by dividing the target object by the grid lines, the cube data being formed of cube elements that are mesh elements forming the target object; and

a combining part combining the cube elements of the cube data in accordance with a predetermined condition selected from a group of predetermined conditions consisting of preventing a change of a shape of the target object formed of the cube data, preserving a substantial shape of the target object formed of the cube data, preventing a substantial change of a total volume of the combined cube elements, preserving the total volume of the combined cube elements, and maintaining an aspect ratio of surfaces of each of composite cube elements created by combining the cube elements within a predetermined range, wherein the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary to satisfy the predetermined condition.

14. (PREVIOUSLY PRESENTED) A method of generating mesh data which represent a characteristic value associated to combined cube elements and are used in a computer analysis related to a target object, comprising:

dividing a target object into a plurality of first elements using an orthogonal grid, each first element corresponding to first data;

combining the plurality of first elements according to a predetermined condition to generate a plurality of second elements, each second element corresponding to second data; and

storing the second elements to be used in the computer analysis related to the target object,

wherein a number of the second elements is smaller than a number of the first elements, wherein the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary.

15. (PREVIOUSLY PRESENTED A method of thermal fluid analysis of a target object by generating mesh data which represent a characteristic value associated to combined cube elements and are used in a computer analysis related to a target object, the method comprising:

forming grid lines orthogonally crossing each other over a target object;

forming cube data from mesh data obtained by dividing the target object by the grid lines, the cube data being formed of cube elements that are mesh elements forming the target object;

generating combined cube elements by combining the cube elements in accordance with a predetermined condition; and

storing the combined cube elements to be used in the computer analysis related to the target object,

wherein the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary.

16. (PREVIOUSLY PRESENTED) A method to generate mesh data, comprising:

receiving data representing a target object;

dividing the target object into a plurality of mesh elements forming mesh data by forming grid lines orthogonally crossing each other over the target object;

determining whether each of the mesh elements is a cube element forming the target object based on a ratio of a volume of the target object in the mesh element and a volume of the mesh element;

forming cube data from one or more of the mesh elements determined as the cube elements;

determining a combination of two or more of the cube elements, the two or more of the cube elements being combinable in any of a plurality of orthogonal planes;

reducing a number of the cube elements by combining the two or more of the cube elements of the determined combination; and

storing a resulting reduced set of cube elements.

17. (NEW) A method of generating cube elements for three-dimensional data, while preserving an aspect ratio, comprising:

capturing original three-dimensional data;

overlaying cube data over the three-dimensional data such as covering the same three dimensional space;

specifying conditions for merging the cube data overlaid on the original three-dimensional data to yield cube elements representing the original three-dimensional data;

merging the cube data sequentially in each of three orthogonal planes including two reciprocal perpendicular directions, according to the specified conditions;

evaluating whether the merged cube data preserve an aspect ratio of the original three dimensional data, and taking correcting actions to improve the aspect ratio if the aspect ratio has been altered more than predetermined values;

performing any additional combination that without being limited to the three orthogonal planes meet the specified conditions and do not alter the aspect ratio beyond the predetermined values; and

outputting the cube data merged, corrected and combined as cube elements.